

## A NEW SPECIES AND A NEW RECORD SPECIES OF THE GENUS *LEPTOTHORAX* MAYR (HYMENOPTERA, FORMICIDAE) FROM CHINA

ZHOU Shan-Yi<sup>1,2</sup>, PENG Yi-Liang<sup>3</sup>, CHEN Zhi-Lin<sup>1,2</sup>, ZHOU Xing-Qiang<sup>4</sup>, LIANG Lai-Tuo<sup>4</sup>

1. College of Life Sciences, Guangxi Normal University, Guilin 541004, China; E-mail: syzhou@mailbox.gxnu.edu.cn

2. Key Laboratory of Ecology of Rare and Endangered Species and Environmental Protection, Ministry of Education, Guangxi Normal University, Guilin 541004, China

3. College of Life Sciences and Biotechnology, Harbin Normal University, Harbin 150028, China

4. Administrative Bureau of Helanshan National Nature Reserve, Inner Mongolia, Alxa Zuoqi 750328, China

**Abstract** A new species of the ant genus *Leptothorax* Mayr, i. e. *L. zhengi* sp. nov., is described. *L. acervorum* (Fabricius, 1793), newly recorded in China is reported. The new species resembles *L. acervorum* (Fabricius, 1793) but differs from the later by dorsum of head strongly longitudinally convex, very thick from lateral view; head, alitrunk, petiole and postpetiole coarsely reticulate and punctate.

**Key words** Hymenoptera, Formicidae, *Leptothorax*, new species, new record species.

### 1 Introduction

The genus *Leptothorax* was established by Mayr in 1855 based on the type species *Formica acervorum* Fabricius, 1793 (= *Leptothorax acervorum* (Fabricius, 1793)). Later in 1861, he established a closely related genus *Temnothorax*. For many years *Temnothorax* was regarded by different authors as a subgenus of *Leptothorax* (Forel, 1892; Ruzsky, 1905; Wheeler, 1901, 1922; Emery, 1915, 1924; Bondroit, 1918; Donisthorpe, 1943), or as a junior synonym of *Leptothorax* (Forel, 1890; Baroni Urbani, 1971; Brown, 1973; Bolton, 1994). Recently *Temnothorax* was revised as a good genus (Bolton, 2003, 2007; Radchenko, 2004). Because most species previously described belong to the genus *Temnothorax*, there are only 18 valid species contained in the genus *Leptothorax* after the separating of the two genera.

Zhou *et al.* (2010) revised the species of *Leptothorax* previously described in Chinese mainland, and found that all the species belonging to the genus *Temnothorax*. When we study the specimens deposited in the Insect Collection of Guangxi Normal University and the College of Life Sciences and Biotechnology, Harbin Normal University, two species of the genus *Leptothorax* are discovered, one is new to science, and another is a new record to China.

### 2 Material and Methods

This study is based on the specimens deposited in the Insect Collection of Guangxi Normal University and the College of Life Sciences and Biotechnology, Harbin Normal University, collected by the authors from Inner Mongolia Autonomous Region and

Heilongjiang Province.

Standard measurements and indices used in this paper mainly follow Bolton (2003).

TL-Total length. The total outstretched length of the ant from the mandibular apex to the gastral apex; when measured in lateral the sum of ML + HL + AL + length of waist segments + length of gaster.

HL-Head length. The length of the head capsule excluding the mandibles, measured in full face view in a straight line from the mid-point of the anterior clypeal margin to the mid-point of the occipital margin. In species where one or both of these margins is concave the measurement is taken from the mid-point of a transverse line that spans the apices of the projecting portions.

HW-Head width. The maximum width of the head in full face view, excluding the eyes.

CI-Cephalic index =  $HW \times 100 / HL$ .

PW-Pronotal width. The maximum width of the pronotum in dorsal view.

SL-Scape length. The maximum straight-line length of the scape, excluding the basal constriction or neck that occurs just distal of the condylar bulb.

SI-Scape index =  $SL \times 100 / HW$ .

AL-Alitrunk length. The diagonal length of the alitrunk in lateral from the point at which the pronotum meets the cervical shield to the posterior basal angle of the metapleuron.

All measurements are expressed in millimeters.

### 3 Description of New Species and Report of New Record Species

*Leptothorax zhengi* Zhou *et* Chen, sp. nov. (Figs 1

This study was supported by the National Natural Science Foundation of China (30770258, 31071971); the Project of Insect Investigation of Inner Mongolia Helanshan National Nature Reserve; Foundation of the Key Laboratory of Ecology of Rare and Endangered Species and Environmental Protection, Ministry of Education, Guangxi Normal University; Guangxi Postgraduate Education Innovative Plan Project (2010106020710M55).

Received 4 May 2011, accepted 21 June 2011.



–2)

Holotype worker. TL 3.2, HL 0.78, HW 0.55, CI 70, SL 0.44, SI 80, PW 0.37, AL 0.83. Head longer than broad, dorsum strongly longitudinally convex, very thick from dorsal margin to ventral margin of the head capsule in lateral view, lateral sides weakly convex, occipital border nearly straight. Masticatory borders of mandibles with 3 distinct apical teeth, followed by 4 indistinct denticles. Anterior clypeal border straight. Antennal scapes not reached to occipital corners. Eyes large, situated at the midlength of the sides of the head. In lateral view,

promesonotal dorsum relatively straight, promesonotal suture indistinct, visible on lateral sides; metanotal groove notched. Propodeal spines triangular in lateral view, broad at base, acute at tip. Propodeal dorsum feebly convex. Petiole without anterior peduncle, petiolar node roughly triangular, anterior face straight, posterior face convex, dorsum bluntly rounded. Subpetiolar process broad, anterior angle bluntly rounded. Dorsum of postpetiole rounded, lower than petiole, 1.5 times as broad as petiole in dorsal view. Gaster oval.



Figs 1–2. Worker of *Leptothorax zhengi* Zhou et Chen, sp. nov. 1. Head in full-face view. 2. Body in lateral view.



Figs 3–4. Worker of *Leptothorax acervorum* (Fabricius, 1793), new record to China. 3. Head in full-face view. 4. Body in lateral view.

Mandibles finely longitudinally striate, interface smooth and shining. Clypeus coarsely longitudinally rugose and punctate. Dorsum of head coarsely longitudinally rugose, reticulate at occipital corners, interface coarsely punctate. Dorsum of alitrunk coarsely reticulate and punctate. Sides of alitrunk irregularly longitudinally rugose and coarsely punctate. Petiole and postpetiole densely punctate. Gaster smooth and shining. Color dark reddish brown; dorsum of head, alitrunk, petiole, postpetiole, and whole gaster darker, mandibles, antennae, and legs lighter.

Paratype workers. TL 3.2 – 3.4, HL 0.78 – 0.80, HW 0.55 – 0.58, CI 70 – 72, SL 0.44 – 0.48, SI 80 – 82, PW 0.37 – 0.40, AL 0.83 – 0.86 (3 individuals measured). As holotype.

Holotype worker, Shatangzi Monitoring Station, Helanshan National Nature Reserve of Inner Mongolia, 29 July 2010, leg. CHEN Zhi-Lin. Paratypes: 3 workers, Shuimogou, Helanshan National Nature Reserve of Inner Mongolia, 26 July 2010, leg. CHEN Zhi-Lin.

This new species resembles *L. acervorum* (Fabricius, 1793), but differs from the later by dorsum of head convex longitudinally, very thick from dorsal margin to the ventral margin of the head capsule in lateral view; head coarsely longitudinally rugose, alitrunk coarsely reticulate and punctate; color dark reddish brown.

Etymology. The new species is named in honor of Professor ZHENG Zhe-Min for his outstanding contribution in systematic entomology.



# ***Leptothorax acervorum* (Fabricius, 1793) New record to China (Figs 3–4)**

*Formica acervorum* Fabricius, 1793: 358.

Specimens observed. 20 workers, Greater Khingan Mountains, Heilongjiang Province, 7 Aug. 2007, leg. PENG Yi-Liang; 4 workers, Herd Ruins, Helanshan National Nature Reserve of Inner Mongolia, 31 July 2010, leg. CHEN Zhi-Lin.

Distribution. China (Heilongjiang, Inner Mongolia); Japan, Korea, North Korea, America, Denmark.

**Acknowledgements** We thank Professor BAI Xiao-Shuan and Professor Nonnaizab (College of Life Sciences and Biotechnology, Inner Mongolia Normal University, China) for giving us an opportunity to join the project of insect investigation of Inner Mongolia Helanshan National Nature Reserve.

## REFERENCES

- Baroni Urbani, C. 1971. Catalogo delle specie di Formicidae d'Italia (Studi sulla mirmecofauna d'Italia X). *Memorie della Società Entomologica Italiana*, 50: 5–287.
- Bolton, B. 1994. Identification Guide to the Ant Genera of the World. Harvard University Press, Cambridge, Massachusetts. 222 pp.
- Bolton, B. 2003. Synopsis and Classification of Formicidae. *Memoirs of the American Entomological Institute*, 71: 1–370.
- Bolton, B. 2007. Catalogue of Ants of the World 1758–2005. Harvard University Press (CD), Cambridge, Massachusetts.
- Bondroit, J. 1918. Les fourmis de France et de Belgique. *Annales de la Société Entomologique de France*, 87: 1–174.
- Brown, W. L., Jr. 1973. A comparison of the Hylean and Congo-West African rain forest ant faunas. In: Meggers, B. J., Ayensu, E. S.

- and Duckworth, W. D. (eds.), *Tropical Forest Ecosystems in Africa and South America: a Comparative Review*. Smithsonian Institution Press, Washington, D. C. 161–185.
- Donisthorpe, H. 1943. A list of the type-species of the genera and subgenera of the Formicidae. *Annals and Magazine of Natural History*, 11 (10): 721–737.
- Emery, C. 1915. Formiche raccolte nell'Eritrea dal Prof. Silvestri, F. *Bollettino del Laboratorio di Zoologia generale e agraria della R. Scuola superiore d'Agricoltura in Portici*, 10: 3–26.
- Emery, C. 1924. Hymenoptera. Fam. Formicidae. Subfam. Myrmicinae. *Genera Insectorum*, 174C: 207–397.
- Forel, A. 1890. Fourmis de Tunisie et de l'Algérie orientale. *Annales de la Société Entomologique de Belgique. Comptes-rendus*, 34: 111–126.
- Forel, A. 1892. Die Ameisenfauna Bulgariens. (Nebst biologischen Beobachtungen). *Verhandlungen der k. k. Zoologisch-Botanischen Gesellschaft in Wien*, 42: 305–318.
- Radchenko, A. 2004. A review of the ant genera *Leptothorax* Mayr and *Temnothorax* Mayr (Hymenoptera, Formicidae) of the Eastern Palearctic. *Acta Zoologica Academiae Scientiarum Hungaricae*, 50 (2): 109–137.
- Ruzsky, M. 1905. The ants of Russia. (Formicariae Imperii Rossici). Systematics, geography and data on the biology of Russian ants. Part I. *Trudy Obshchestva Estestvoispytatelei pri Imperatorskom Kazanskom Universitete*, 38 (4–6): 1–800.
- Wheeler, W. M. 1910. Ants: their structure, development and behavior. *Columbia University Biological Series*, 9: 1–663.
- Wheeler, W. M. 1922. Ants of the American Museum Congo expedition. A contribution to the myrmecology of Africa. VII. Keys to the genera and subgenera of ants. *Bulletin of the American Museum of Natural History*, 45: 631–710.
- Zhou, S-Y, Huang, J-H, Yu, D-J and Liu, Z-J 2010. Eight new species and three newly record species of the ant genus *Temnothorax* Mayr (Hymenoptera: Formicidae) from the Chinese Mainland, with a key. *Sociobiology*, 56 (1): 7–26.

## 中国细胸蚁属一新种及一新纪录种 (膜翅目, 蚁科)\*

周善义<sup>1,2</sup> 彭一良<sup>3</sup> 陈志林<sup>1,2</sup> 周兴强<sup>4</sup> 梁来柁<sup>4</sup>

1. 广西师范大学生命科学学院 桂林 541004, E-mail: syzhou@mailbox.gxnu.edu.cn
2. 广西师范大学省部共建珍稀濒危动植物生态与环境保护教育部重点实验室 桂林 541004
3. 哈尔滨师范大学生命科学与生物技术学院 哈尔滨 150028
4. 内蒙古贺兰山国家级自然保护区管理局 阿拉善左旗 750328

**摘要** 描述细胸蚁属 *Leptothorax* 1 新种, 即郑氏细胸蚁 *L. zhengi* Zhou et Chen, sp. nov., 报道另 1 中国新纪录种, 堆土细胸蚁 *L. acervorum* (Fabricius, 1793)。

**郑氏细胸蚁, 新种 *Leptothorax zhengi* Zhou et Chen, sp. nov. (图 1~2)**

新种与堆土细胸蚁 *L. acervorum* (Fabricius, 1793) 相似, 但头部背面明显纵向隆起, 侧面观头部背缘至腹缘很厚; 头部具粗糙纵皱纹, 并腹胸背面具粗糙网纹和刻点; 体色深红褐色。

正模工蚁, 内蒙古贺兰山沙塘子监测站, 2010-07-29, 陈志林采。副模 3 工蚁, 内蒙古贺兰山水磨沟, 2010-07-26,

**关键词** 膜翅目, 蚁科, 细胸蚁属, 新种, 新纪录。

**中图分类号** Q969.554

陈志林采。

词源: 新种种名以郑哲民教授姓氏命名, 以示对郑哲民教授对昆虫分类学研究所做出显著贡献的敬意。

**堆土细胸蚁 *Leptothorax acervorum* (Fabricius, 1793) 中国新纪录 (图 3~4)**

*Formica acervorum* Fabricius, 1793: 358.

检测标本: 20 工蚁, 黑龙江大兴安岭, 2007-08-07, 彭一良采; 4 工蚁, 内蒙古贺兰山牧人遗址, 2010-07-31, 陈志林采。

分布: 中国 (黑龙江, 内蒙古); 日本, 韩国, 朝鲜, 美国, 丹麦。

\* 本文为祝贺郑哲民教授执教 60 周年暨 80 寿辰而作。